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ABSTRACT

This paper documents a successful methodology for the validation of data in general and for evaluating educational finance data in particular. The report addresses the errors found as a result of the independent completion of Part B-1 of the Elementary-Secondary General Information System (ELSEGIS)--the Local Education Agency Fiscal Report. This survey collects data on beginning balances, revenues, expenditures, and ending balances from a sample of 2,500 school districts across the country. No discussions of the value of the instrument or the data reported there are provided. While all errors discovered are reported, the major focus is on systematic errors, those errors by type or data element that appear with great frequency. This study is significant in that it shows the magnitude and direction of the errors that may enter a large-scale survey and the steps that could be taken to avoid them. Awareness of the types of errors that may be encountered in a survey could permit a researcher to design his data collection system so that more accurate data could be obtained. (Author/DN)

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NATIONAL SURVEYS OF EDUCATIONAL FINANCES

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PREFACE

The research which led to the development of the survey validation system described in this report was supported in part by Office of Education contract number OEC-0-72-5198. As the Office of Education provides a nonrestricting atmosphere in which research may occur, the conclusions are those of the authors and not necessarily those of the Office of Education. Special thanks go to Mr. Harold Nisselson and Mr. Gerald Kahn of the U.S. Office of Education and Mr. David Who of RMC Research Corporation for their helpful suggestions and criticisms throughout the study. Mr. Irwin worked on this study while at RMC Research Corporation. He has subsequently joined the Congressional Research Service.

BACKGROUND OF STUDY

The mainstay of research is data, and data concerning educational programs are typically collected through surveys. In order to collect data on elementary and secondary schools, the U.S. Office of Education utilizes the Elementary-Secondary General Information System (ELSEGIS). ELSEGIS is a multi-part survey which currently consists of the following instruments:

Part A-1:	Local Education Agency Fall Report on Staff and Pupils
A-2:	State Education Agency Fall Report on Staff and Pupils
Part B-1:	Local Education Agency Fiscal Report
B-2:	State Fiscal Report
Part C-1A:	Fall Report on Schools
C-1B:	Fall Report on Schools (Supplementary Report)
Part D-1:	State Report of Operating and Non-operating Local Public School Systems
D-2:	State Fall Estimates of Expenditures and Salary Data for Public Schools

The system is comprehensive in terms of information collected and school districts covered. Using a stratified sample of approximately 2,500 school districts representative of region, metropolitan status code (MSC), and enrollment size, variables such as school enrollment, grade level, local education agency (LEA) expenditures, and LEA revenue may be estimated for the nation as a whole.

The survey with which this study is concerned is Part B-1, Local Education Agency Fiscal Report. This survey collects data on beginning balances, revenues, expenditures, and ending balances (as shown in Table 1 below) from the sample of 2,500 school districts across the country. The reporting format utilized in the analysis of ELSEGIS data has typically been to prepare tables and data displays in a descriptive manner with a minimal amount of analytical content. The most recent analysis plan, however, was based on the identification of the critical issues, both current and projected, in education finance. In addition to the highly analytical tables, baseline data were presented in a series of

descriptive tables to permit continuity in the ELSEGIS reporting effort. This information, available in reports published by the Office of Education, is valuable to educational planners, policy makers, and administrative researchers.

Table 1

DATA ELEMENTS - ELSEGIS V FINANCE SURVEY

Data Elements	Data Elements
A. Beginning Balances 1. For Current Operations 2. For Capital Commitments 3. Total	K1. Administration K2a. Instructional Salaries/Teachers K2b. Instructional Salaries/Other Prof. Staff K2c. Instructional Salaries/Non-Prof. Staff K2d. Instructional/Total Salaries
B. Revenue from Local Sources 1. Taxation and Appropriations 2. Tuition and Transportation Fees 3. Other 4. Total	K2e. Other Instructional Expenses K2f. Total Instructional Expenses K3. Attendance Services K4. Health Services K5. Pupil Transportation Services
C. Revenue from Intermediate Sources	K6. Operation of Plant
D. Revenue from State Sources	K7. Maintenance of Plant
E. Revenue from Federal Sources 1. ESEA Title I 2. ESEA Title II 3. ESEA Title III 4. ESEA Title VI 5. ESEA Title VII 6. ESEA Title VIII 7. NDEA Title III 8. PL-815 9. PI0874 10. Head Start 11. Follow Through 12. Vocational Education 13. National Lunch/Milk Programs 14. ESAP 15. Other 16. Total	K8. Fixed Charges K9. Total Allocation to Pupil Expen. K10. Food Services K11. Student Body Activities K12. Community Services K13. Total Current Expenditures L1. Sites, New Buildings, Add. and Imp. L2. New Equipment L3. Total Capital Outlay M1. Paid on Principal M2. Paid for Interest M3a. Paid to School Housing Authority/ Principal M3b. Paid to School Housing Authority/ Interest M5. Other M6. Total--Debt Service
F. Total Revenue Receipts	N. Outgoing Transfers
G. Total Non-Revenue Receipts	O. Other Expenditures
H. Incoming Transfers	P. Returned to Appropriating Authority
I. Total Receipts	Q. Total Expenditures
J. Total of All Balances; Receipts, and Transfers	R. Ending Balances 1. For Current Operations 2. For Capital Commitments 3. Total
	S. Total of Expenditures and Ending Balances

The basis for the entries made in the ELSEGIS finance survey is Financial Accounting for Local and State School Systems by Paul L. Reason and Alpheus L. White, USGPO, Washington, 1957, and referred to as USOE Handbook II. This handbook was designed to provide a set of standard receipt and expenditure accounts as a foundation for the accurate and consistent reporting of school district financial information. While designed to be a guide for all states, the use of Handbook II has not been mandated and many states have developed and implemented their own accounting systems.

As anyone who has dealt with surveys is aware, not all questions are interpreted the same way by different people, nor are all data reported accurately. Variations among the accounting systems employed by the LEAs and states, differences in the definitions of terms, and other reasons caused the quality of some of the ELSEGIS finance data to be suspect. Therefore, a study was begun to conduct a field validation and an error analysis of the ELSEGIS data to accomplish three objectives:

1. To examine the existence of both systematic and random errors in the data reported on the ELSEGIS finance form and to determine the potential impact on national estimates and projections;
2. To suggest changes in survey procedures, forms, concepts, instructions, etc., in order to reduce the number of errors in future surveys; and
3. To identify the needs for further research in validity study areas.

METHODOLOGY

A thorough understanding of the total data generation and collection processes and recordkeeping practices was essential in conducting an effective review or data-validation study. Thus, the first step taken in the performance of this study was the development of a model to serve as a guide for project activities. Using operational terms, the model was designed:

1. to provide a background for interpreting and evaluating observed discrepancies in the data validated,
2. to provide a schematic method for field interviewers to understand the data generation and collection processes at the LEA and SEA levels, and
3. to translate the initial findings of the project team into a preliminary view of the data generation and collection processes.

The model that was developed was a response error model. The response error model consisted of an identification of the sources and types of errors that could enter the data reporting system. The error types were identified by reviewing the editing procedures and errors discovered in the previously collected and analyzed ELSEGIS data, by reviewing the findings of validation studies conducted on similar types of surveys, and through a knowledge of the problems inherent in the state-federal accounting system relationship. The response error model was based on a submodel of school district financial operations viewed as an information-generating process.

While the categories of errors are not mutually exclusive, it is useful to categorize them for analytical purposes into the following types:

1. Arithmetic Errors
2. Definitional Errors
3. Estimation Errors
4. Formatting Errors
5. Timing Errors

6. Transcription Errors
7. Lack of Thoroughness
8. Lack of Source Data
9. Misunderstood Instructions
10. Repeat (Carry-Over) Errors--this includes total line errors unless they were arithmetic
11. Other--Identified as to cause
12. Unknown

1. Arithmetic Errors are errors in the basic addition or subtraction employed in building the ELSEGIS records or where a percentage of an LEA figure was incorrectly calculated and entered into the ELSEGIS form.
2. Definitional Inconsistencies occur when the SEA or LEA utilizes a different definition than that used by OE for the same term. Examples of this may be seen in the varying definitions for "Other Instructional Expenditures," "Nonrevenue Receipts," and "Other Agency Expenditures."
3. Estimation Errors occur when the respondent had no data at hand for a given data element and was forced to make an estimate. Further, estimation errors may occur where data are partially recorded on SEA or LEA records or where proration methods must be employed.
4. Formatting Errors are those errors that arise because data are maintained at the SEA or LEA in a different format from that required for completion of the ELSEGIS instrument. These types of errors will generally be found in conjunction with one or more of the other errors described.
5. Timing Errors can be said to occur when more accurate data become available after the ELSEGIS instrument is completed.
6. Transcription Errors occur when numbers are incorrectly transcribed from one form to another.
7. Lack of Thoroughness: This code is used when there appears to be no reason for an error other than carelessness on the part of the respondent.
8. Lack of Source Data: Errors of this nature will occur when required data are not available to the respondent.
9. Misunderstood Instructions: This code is used when the respondent did not understand the instructions given for the ELSEGIS instrument.

10. Repeat (Carry-Over) Errors are said to exist when the error is solely the result of a previously reported error, and generally appears in a total line.

11. Other Errors are all errors for which a cause is known other than those above.

12. Unknown Errors are those errors for which the analyst is unable to assign a cause.

The response error model was implemented within a methodological framework as shown on Figure 1. This operational methodology was developed to show the logical flow of events in the validation of the ELSEGIS data, delineating each step from the start of the fieldwork to the publication of final reports.

The second major step in the validation of the ELSEGIS finance data was the development of the analysis plan. This analysis plan was designed to direct the search for two distributions of errors:

- the distribution of errors by questionnaire data element, and
- the distribution of errors by type of error.

Consequently, the analysis concentrated on those errors which appeared with a high frequency (systematic errors) as opposed to infrequently appearing errors (random errors). In the case of the distribution of errors by data element, a review was made of those data elements in which errors were most frequently made, regardless of the type of error or cause. From this review, it would be possible to determine which data element contained the greatest error in the survey and thus deserved the most careful review for subsequent surveys. A review of the frequency of each type of error (arithmetic, transcription, etc.) would allow the determination of the need for special instructions.

The data collection methodology utilized consisted of an interview with the person who originally completed the ELSEGIS instrument for 1971-72 and an independent completion of the ELSEGIS instrument utilizing basic data sources available at the SEA and LEA. In accomplishing this, a package of instruments was assembled consisting of interview guidelines,

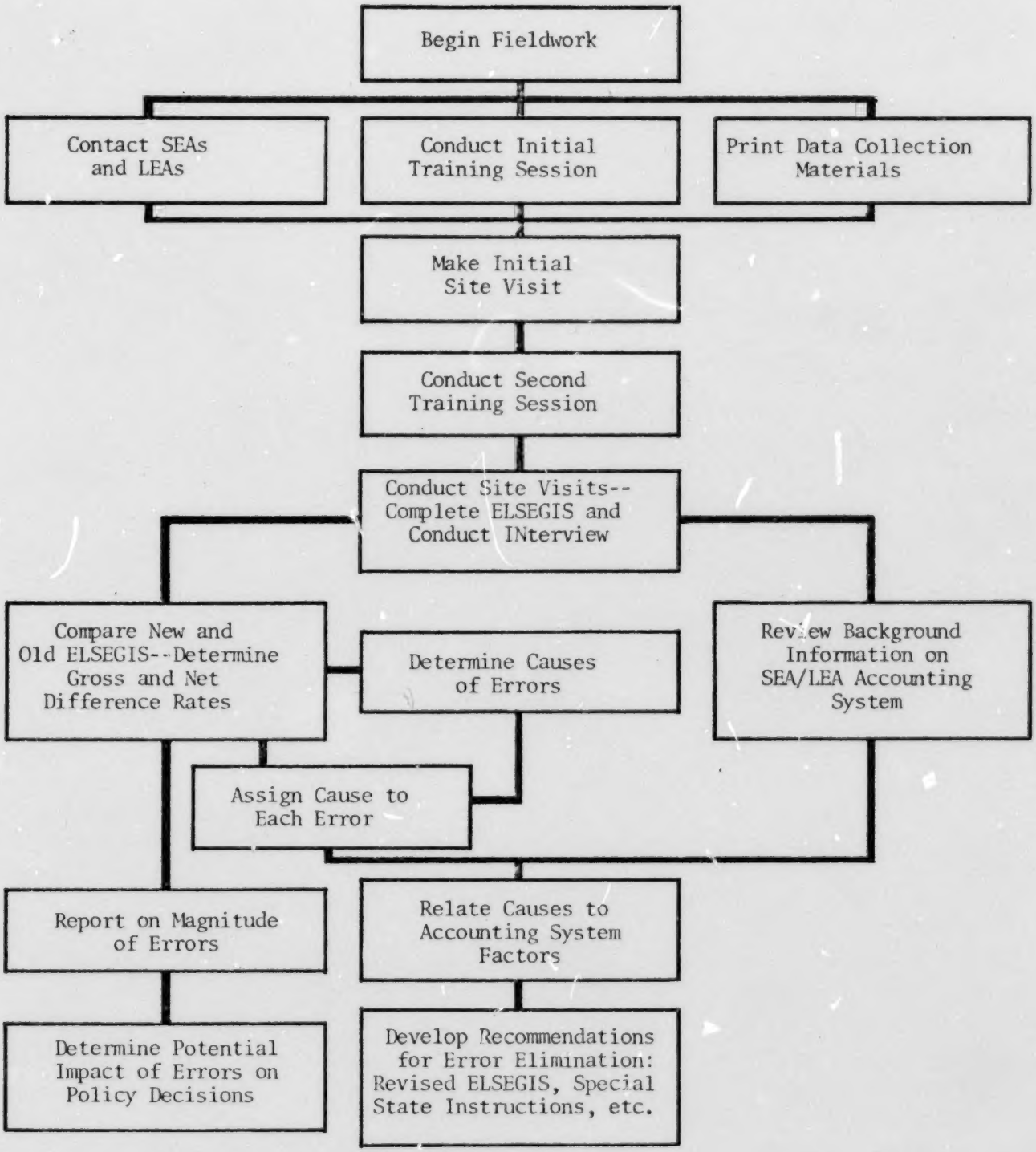
Begin Fieldwork
Contact SEAs and LEAs
Conduct Initial Training Session
Print Data Collection Materials
Make Initial Site Visit
Conduct Second Training Session
Conduct Site Visits--Complete ELSEGIS and Conduct INterview
Compare New and Old ELSEGIS--Determine Gross and Net Difference Rates
Determine Causes of Errors
Review Background Information on SEA/LEA Accounting System
Assign Cause to Each Error
Report on Magnitude of Errors
Relate Causes to Accounting System Factors
Determine Potential Impact of Errors on Policy Decisions
Develop Recommendations for Error Elimination: Revised ELSEGIS, Special State Instructions, etc.

Figure 1: OPERATIONAL METHODOLOGY

the original ELSEGIS instrument, and a series of worksheets developed to allow the analyst to go from the basic data sources at the SEA or LEA to the ELSEGIS instrument.

The next step in the study was selection of the sample of LEAs about which data would be collected. The sample selection was accomplished by USOE. The sample selection procedures will be discussed more fully in the section concerning the full-scale implementation of the study, but, briefly, sites were selected such that national projections of the data collected could be made.

Following the selection of the sample, the site visits were conducted, the interviews completed, and the basic ELSEGIS data collected. Following this, the data were processed and an ELSEGIS instrument was completed for each of the LEAs in the sample. The final step in the study was to conduct the analysis of the data, developing the distribution of errors, assigning causes to each, and developing a series of recommendations for changes in the ELSEGIS instruments, procedures, and instructions. Basic statistical analysis focused on the computation of gross and net difference rates for each item reported in the ELSEGIS survey. Difference rates were computed between the validated data and that previously submitted by the states. Similar school districts and states have been grouped for comparative analyses.

The study itself was performed in three distinct phases, Design, Pilot Test, and Full Scale Implementation. During the Design Phase, described above, the approach and materials were developed and pretested for their ability to elicit the required information. The Pilot Test consisted of a test of the system in 15 school districts in four states. The Full Scale Implementation was composed of data collection for 30 school districts in 20 states.

PILOT STUDY

This section describes the results of the pilot study conducted in Iowa, Massachusetts, North Dakota, and Virginia. The purpose of the pilot study was to gain actual field experience with the study design, the materials, and the instructions to interviewers so that appropriate changes could be incorporated before full implementation. The site visits were made by two staff members to two states each from November 1972 to April 1973. At the outset of the study, the plan was to limit the site visits to the state agencies only, but this was modified after the first phase of the pilot study was completed.

The data reported during the ELSEGIS survey were generally taken from statistical records located at the state education agency. Seven states forwarded the questionnaires to the local education agencies for completion from LEA records, although the same information may have been available at the state offices. Of the four states in the pilot study, Virginia was one that had sent the questionnaires to LEAs.

The original intent of the project was to evaluate the ELSEGIS III survey for the 1969-70 school year. There were several reasons for choosing that particular year. First, the school district financial data would be collected to approximately match the 1970 Census. In connection with this, the ELSEGIS sample was greatly expanded from its normal size to 4,800 school districts for that year, and efforts were made by the Office of Education and the Bureau of the Census to coordinate and integrate the data collected by ELSEGIS and the Census. Second, given this extra effort, it would be more important than ever to have accurate estimates on the national level of differences and errors made in reporting the ELSEGIS data. Finally, the 1969-70 school-year information was, at this stage of the study, the latest data published by the Office of Education.

As the study progressed, it was found to be most helpful if the state official could provide the following set of documents: the state financial accounting manual for school districts, state guidelines and summaries of federal aid to education programs available in the state,

a state education agency organization chart, any regional program descriptions, copies of school district financial forms for reporting data to the state for the districts in the sample, coding instructions--computer or otherwise--for transcribing data from the district forms to the ELSEGIS forms, and state lists of payments to the districts for federal programs.

The state accounting manual was indispensable for the comparison of definitions with USOE Handbook II on financial accounting which is the basis of the ELSEGIS definitions. In some cases, however, it was found that the definitions were identical, but the states and particularly the districts did not follow the definitions. The state federal aid summaries were useful for an overview of the federal programs that existed in the state and the program names that were used locally. For example, Title I of the Elementary and Secondary Education Act would often be called "ESEA Title I," but sometimes merely "Title I" and "aid to the economically deprived," and once simply "P.L. 89-10." Organization charts were used as a guide to determine the other officials that could provide additional information about programs and also to identify when programs such as vocational education were operated outside of the state education department.

Regional program descriptions provided clues as to what other educational services (and expenditures) might exist in the state which would not be reported on the district financial records. Copies of the school district financial reporting forms were obtained to facilitate the comparison of data. These forms plus the coding instructions for ELSEGIS provided the means for checking the completed ELSEGIS forms and the means for understanding many of the differences which were then found. By means of the combination of district reporting forms and the coding instruction, errors in the instructions and, in at least one case, errors by the computer programmer in the implementation of the instructions were detected.

Finally, the state lists of payments to the districts for federal programs was found to be essential. Many errors were found in reporting federal revenues which pass through state departments of education. In this case, the funds can be inaccurately reported or overlooked altogether when the districts send their annual financial reports to the state. The state would frequently complete the ELSEGIS form from the district report without validating the records against the original state payments list.

During the pilot study, the basic attempt of the researcher was to obtain all possible financial information, and then to delete everything that was not essential. The objectives of the study were still being refined at this point. First as accurate information as could be obtained for each school district in the sample was desired and we wanted to obtain a full description of the state (and local) financial system from the accounting principles and manuals utilized to the level of computerized information retrieval currently installed (and planned for) in the state departments. Different people and offices had to be contacted for each of these areas, and a point of diminishing returns was often soon found with additional effort yielding an equivalent gain in knowledge about the system.

As a result of the state site visits in the pilot study, it was decided to visit at least some of the school districts in the sample. The reasons for this extension of the original design were numerous, but a key factor was the judgment of the researchers that they were obtaining neither a full description of accounting practices which were used by the districts to report their financial information to the states nor the most accurate data which might be available. The pilot study was the proper place to evaluate these judgments and, consequently, nine of the 13 school districts in the pilot were visited.

The results of the school district site visits were much as had been predicted. Additional errors were found beyond those induced or transmitted at the state level, but no systematic patterns were found. The state accounting guidelines were often modified to meet

local needs or practices. And finally it again was found that the point of diminishing returns was quickly reached. While many figures could be checked against the local books in five or ten minutes, other data would require a number of days to verify, reviewing unorganized ledgers and account books on a page-by-page basis. At this point, it was determined that the outer limits of the scope of the study had been obtained.

A number of insoluble problems were found. For example, some items were reported on the basis of computer printouts which at the time of the evaluation study had either been destroyed or could no longer be found--just the opposite of the usual case where more complete and accurate data can be obtained by reviewing data after it has been audited. Some accounts were either lost or had not been kept in the first place. In other cases, individuals would disagree on the correct identification of a particular account. Occasionally, two or more sets of data would exist, with little guidance supplied by state or local officials as to which data were best or more accurate. This was the case where a school district had a highly automated accounting system on an accrual basis, but the state required the annual reports to be submitted on a cash basis. In that particular situation, the conversion of the district's accrual report to a cash basis report introduced a number of errors that were ultimately reported on the ELSEGIS survey.

Two major aspects found in the pilot study which may have an impact on financial surveys in the future were school district "dependency" and the existence of regional services. Dependency consisted of shared services between the school district and the city or county in which it was located. Many items from health services to operation and maintenance of the school plant are currently being supplied by non-school political jurisdictions, and, in the opinion of the researchers, there are sharply increasing instances of these shared services. Regional or multi-district services were also observed in all states in the pilot study, where computer centers, media centers, and trained specialists provide services to many districts which are not entered in district financial reports even though the services are supplied to the children

in the school district. This, too, seems to be a growing trend, and there appears to be no easy way to reflect these services in surveys of school district finances.

The pilot study established the content and limits of what could be obtained in field visits at the state and school district level. Interview procedures were streamlined as the various protocols became established and as our knowledge increased as to the items most likely to be found at the state and district levels. The categories of errors and differences of opinion reflected in the ELSEGIS reports were described in the pilot study report and few additional categories were found in the full-scale implementation. From the experience of the pilot study, it was decided that a thorough visit to all the school districts in the sample would consume an inordinate amount of time and resources to be a useful part of the full-scale study. Instead, it was decided that an attempt would be made to visit only one district in each state in the sample, in order to verify the findings made at the state level and to spot-check the accuracy of various accounts, but to spend only one day in the school district. Finally it was determined that the second major purpose of the study, to develop detailed descriptions of state financial reporting systems, could be fully obtained by the state level visits coupled with a visit to a single school district.

Finally, it should be noted that there was a change from the evaluation of ELSEGIS III (1969-70 school year) to ELSEGIS V (1971-72 school year) as a result of the pilot study. Particularly in the detail and scope of the field work, this kind of rigorous examination of the ELSEGIS financial survey, often considered to be the best survey of school district finances in the nation, has never been done before. As a result of the chance to examine and evaluate comparable financial records and reporting systems at both the state and school district level, more time was spent on the pilot study than originally planned. By the time the results of that effort were evaluated--the late Spring of 1973--the original survey appeared to be out of date. The full scale implementation did not begin until the Fall of 1973. By that time, the ELSEGIS financial records for the 1971-72 school year (ELSEGIS V) were then available from the Office of Education.

FULL SCALE IMPLEMENTATION

Building on the pretest described above, the full scale implementation of the validation study occurred in a 20 state, 30 school district sample. The data collection took place through site visits. One or two professionals visited each site selected, conducting the one-hour interview and completing the ELSEGIS form from the state's basic data sources. The amount of time required for this effort varied from two to ten man-days per state depending on size and complexity. The major thrust of the site visits was to gather data which could be compared to data previously submitted by the state as well as to learn directly the problems which the state encountered in the completion of the ELSEGIS finance instrument.

In addition to the visit to the state education agency, a site visit was made to one of the sample school districts in each state in order to determine the availability of the required financial data at that level. The function of this visit was to determine whether the school districts would be better able to complete the ELSEGIS forms than the state education agencies, as well as to substantiate SEA results.

The sample of school districts about which data were collected in the full scale implementation of the study was selected by the Office of Education. The universe included all school districts with an enrollment of 300 or greater that previously completed the ELSEGIS instrument for 1971-72 with the exception of New York City (because of the unwarranted time requirements due to complexity) and Iowa, Massachusetts, North Dakota, and Virginia (which were included in the pilot test). The original ELSEGIS sample was subsampled down to make the cells self-weighting, and differential weights were applied according to school district size and degree of urbanization. Table 2 shows the sample selection procedure and Table 3 shows the school districts selected.

Table 2

ELSEGIS Sample Selection Procedure

Fall 1971 Enrollment	MSC 1	MSC 2	MSC 3
25,000+	1[a] 100[b]/5[c]	2 70/3	
10,000-24,999	3 124/2	4 272/2	5 123/1
5,000- 9,999	6 595/3		7 427/2
2,500- 4,999	8 889/3		9 1006/2
300- 2,499	10 1824/2		11 5195/5

Note: MSC 1 - Metropolitan Status Code 1 - Central City
MSC 2 - Metropolitan Status Code 2 - Other Urban
MSC 3 - Metropolitan Status Code 3 - Rural

(a) Sample Cell
(b) Number in universe
(c) Number selected

The first step in the validation of the data submitted on the ELSEGIS finance survey was to conduct an interview with the individual who had previously completed the form. The interview was structured through the use of an interview guideline which consisted of 13 questions focusing on some of the known areas of confusion as well as on errors occurring most frequently on previous surveys. In addition, data were collected concerning background information on the state's accounting system (such as the degree of computerization and the use of USOE Handbook II). This interview procedure was designed to detect and describe the principal causes of error in the original survey. For example, a check was made to determine the extent to which federal and state definitions were consistent. Further, when exact expenditure information was not

Table 3

ELSEGIS Validation Study Sample

State, School District	Fall 1971 Enrollment	Sample Cell
Alabama, Montgomery	37,425	1
Arkansas, Fort Smith	12,994	3
California, China Lake Joint Elementary	2,443	10
California, Palm Springs Unified	6,690	6
Connecticut, Hamden	9,930	6
Florida, Volusia County	32,519	6
Georgia, Greene County	2,522	9
Illinois, Rockford	41,010	1
Illinois, Southeastern Comm. Unit	628	11
Kentucky, Letcher	5,637	7
Louisiana, Livingston Parish	10,187	5
Michigan, Ann Arbor	18,538	3
Michigan, Gerrish Higgins	1,100	11
Michigan, Lansing	30,825	1
Minnesota, Robbinsdale	27,983	2
Missouri, Berkeley	4,458	6
Missouri, Carthage R-9	3,569	9
New Mexico, Los Alamos	5,134	7
New York, Amherst	3,028	8
New York, Lake Placid	1,080	11
New York, Sewanhaka	11,682	4
North Carolina, Mecklenburg County	80,047	1
Ohio, Bexley	2,608	8
Ohio, Perry	1,841	10
Oklahoma, Davenport	370	11
Oregon, Hillsboro 007	2,595	8
Texas, Ector Co. ISD	24,025	4
Texas, Junction Co. ISD	858	11
Texas, Pasadena ISD	35,276	1
Washington, Highline	27,910	2

available from a state's records an attempt was made to determine whether the method of estimation or proration was soundly based and whether it was uniformly applied.

The second step in the validation study was to complete an ELSEGIS form for each LEA in the sample from the state's basic data sources. In going from the basic data sources to a properly completed ELSEGIS form, a series of worksheets and their accompanying instructions were developed. The rationale for this was twofold: first, to ensure the collection of accurate data across LEAs and, second, to ensure consistency among the various analysts that were used in the data collection effort. It was the purpose of this package to specify the steps necessary in the transference of existing source data from original documents at the SEA or LEA to the ELSEGIS. The basic school district reporting documents were reviewed and, where state and federal definitions did not coincide, the state handbooks were examined in depth. While the federal accounting handbook (Handbook II) has been in existence for 17 years, not all states have adopted the system of accounts contained in it. In these cases, states generally had developed a translation device either to allow them to move between the two charts of accounts or between the state's chart of accounts and the ELSEGIS instrument. These translation devices were reviewed carefully as they frequently were a source of error. Once the basic source data were obtained from state files, an ELSEGIS instrument was completed for each of the state's sample school districts. The data thus developed were compared against that previously submitted by the state and any discrepancies were studied until resolved.

The data processing which was performed consisted of two phases. The first phase was to complete a case study for each of the sites visited. This case study was designed to provide qualitative information about the SEA/LEA, the federal programs in existence, and the relationship of the ELSEGIS instrument to the local accounting methods. An outline was developed which allowed the analyst to go from the data collected on site and the responses to the questions in the interviews to a consistent report for each of the sites visited. The second section of the data processing aspect of this study was quantitative in nature consisting of the determination of the errors in the data collected.

STUDY OUTPUTS

A number of significant outputs have resulted from this study. A package of site visit reports documenting the ELSEGIS completion process in each state visited has been prepared along with an overall summary. Among the findings that resulted from a review of the site visit reports are:

1. Joint state-federal programs are often reported incorrectly--For programs that were completely funded by state or federal sources, the reporting of data is manageable by the states and school districts. Those programs that are funded jointly by the state and federal government present a serious problem for respondents, however, for the support of programs such as school lunch and vocational education, school districts typically receive one check from the state with neither the source of funds nor the portion provided by the state and federal governments shown. The result of this is that school districts typically report the programs as funded entirely out of state or federal sources, with the tendency toward the latter. While state records will generally show the distinction, these data are only available by solicitng data from a separate office, a practice that is frequently not done when the original ELSEGIS report was prepared.

2. Some programs are not reported--This observation was true in a number of the states visited. The individual who completed the ELSEGIS form would enter all the programs that could be discovered (usually the large programs in terms of dollars), but this often meant that some programs, especially the small ones, were missed. Programs that were not reported include Drug Education, National Forest-Shared Revenues, ESEA Title II, and Vocational Education.

3. Programs operated by intermediate agencies are frequently not reported--Unless the school district is directly responsible for the administration of a program and has actually received program funds, the program is frequently not reported on the ELSEGIS form. An example of this may be seen in the case of one of the states visited. In these school districts, the ESEA Title III, Neighborhood Youth Corps, and Head Start programs were all operated by intermediate agencies about which

the district had no information and for which the state had only aggregate data. This was a problem for validation of the ELSEGIS as the states and LEAs had few records to indicate the existence of these programs and only through considerable research were they discovered. There is no way to be certain that all of the programs were reported even with the effort that was put forth.

As previously stated, the approach which RMC followed in the data analysis was to search for two distributions of errors:

- the distribution of errors by questionnaire data element, and
- the distribution of errors by type of error.

Consequently, analysis was concentrated on those errors that appeared with a high frequency. In the first case, data elements in which errors were most frequently made regardless of the type of error or cause were reviewed. From this review, it was possible to determine which data elements contained the greatest error in the ELSEGIS finance survey and thus deserved the most careful review in future surveys. A review of the frequency of appearance of each type of error (arithmetic, transcription, etc.) allowed the determination of whether a need existed for special instructions. Difference rates were computed between the validated data and the state-reported data. Whenever there were differences between the actual data and the reported data, a resolution interview was held to determine the cause of the discrepancy. Examples of the types of inconsistencies between the state reports and federal reporting requirements include:

Estimation Error--Midwestern state[1]

The staff salaries reported by this state are estimated, not actual expenditures. They are reported on their annual reporting form in this manner.

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1. Because of a guarantee of confidentiality of data reported and because each state had discrepancies that could have been listed here, state names have not been identified.

Formatting Error--Great Lakes state

The form from which this state draws the data to prepare the ELSEGIS reports does not contain line items for PL-815 and National School Lunch among other federal programs. Data for these programs are available from either a separate report or directly from the school districts themselves.

Timing--Southern state

The ELSEGIS reports for this state are completed from the school district financial report. The form is required to be submitted by the LEAs to the state by July 15, but the last of the reports usually arrived in October. These forms are then audited, a procedure which was not completed for the fiscal year ended June 30, 1972, until August 2, 1973. As the ELSEGIS form was to be submitted to the Office of Education by March 15, 1973, audited data were not reported.

Lack of Thoroughness--Northwestern state

While this state's reporting form is highly detailed, errors in the coding instructions designed to transfer data from the form to the ELSEGIS instrument resulted in receipts from PL-874 and NDEA Title III being reported under "Other Federal," Federal Forest Funds being reported under PL-874, and no entries made on the NDEA Title III line.

Lack of Source Data--Western state

For the repayment of state building fund debt by the local school districts, a single payment is made with no designation of the portion of the funds that is either for interest or principal. The state, in reporting on the ELSEGIS form, arbitrarily applied the division of 60% principal, 40% interest to the total amount.

Misunderstood Instructions--Northwestern state

As this state is moving toward the adoption of a program budgeting approach to accounting for school finance, retirement and social security payments made on behalf of pupil transportation workers were reported under Pupil Transportation rather than fixed charges.

In addition to the above types of outputs, five products remain to be developed as the study is concluded.

1. All data comparisons will be completed and gross and net error rates for each data item will be computed.

2. Estimates of the errors in national projections of review and expenditures will be made. The sample was selected in a manner such that this can be accomplished easily through the application of the sample weights. Once this is accomplished, an analysis of the resulting data will be made to determine the policy implications, if any, of the discrepancies found.

3. Recommendations for revised accounting and data reporting methods will be developed. These recommendations will be designed to affect the relationship between the states and the federal government vis-a-vis the ELSEGIS survey alone and will not presume to revise accounting methodology on a broader scale.

4. The relationship of the frequency or magnitude of the errors to other state or school system characteristics will be investigated. Among the variables to be investigated will be school district size, degree of computerization of accounting facilities, and the use of federal accounting definitions. Standard multiple regression tehcniques will be applied.

5. A thorough description of the financial accounting systems in the 24 states visited will be prepared. This could serve as the basis for the preparation of individual ELSEGIS instructions for each state as well as a guideline for the comparison of educational revenues and expenditures on a state-by-state basis.

SUMMARY

The primary purpose of this paper was to document a successful methodology for the validation of data in general and for evaluating educational finance data in particular. Secondly, the paper was designed to caution against the unquestioning acceptance of financial data as reported, even data subjected to careful audit procedures. The report addresses the errors found as a result of the independent completion of the ELSEGIS instrument for a sample of school districts. As such, the report dealt only with what is wrong with the ELSEGIS instrument and did not discuss the value of the instrument and the data reported therefrom. While reporting all errors discovered, the major effort was concentrated on systematic errors, those errors by type or data element which appear with great frequency.

The significance of this study is that it shows the magnitude and direction of the errors that may enter a large-scale survey and the steps which may be taken to avoid them. Awareness of the types of errors that may be encountered in a survey will permit the researcher to design his data collection system so that more accurate data may be obtained.